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Site selection of temporary housing after earthquake by GIS and AHP method Case study: Region 6 of Shiraz

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Extended abstract

1- Introduction

Crisis management is a useful science that by observing the crises systematically and analyzing them is in searching for the equipment that can prevent the crises or if they have happened, in order to decrease the effects of it, it could assist and improve the situation enormously. In other words, the goal of crisis management is planning, organizing and doing the jobs in the way that decreases disaster effects on damaged people and environment. One of the most important matters that responsible organizations in crisis management always consider is choosing a place for emergency

or temporary establishments of damaged masses from the events. Every year all over the earth planet, much people due to incidence of the natural events like earthquake and flood lose their lives and homes. Providing appropriate places for establishing the assistance centers after the earthquake and housing wanderers is one of the important items in planning and crisis management. In this research, the sixth region of Shiraz Municipality has been chosen and studied because of its high seismic potential as the sample of preparation of place database in order to locate temporary housing of damaged masses caused by probable earthquakes.

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2- Theoretical bases

Habitation is one of the human's primary requirements. So after each disaster that causes losses and harms to the permanent settlements, and since building home for wanderers needs much time and cost, the discussion of temporary housing has been introduced. In fact, the temporary housing is residential units with low price or free that is given to stricken people and they can

continue living there for the required time until gaining the necessary facilities for rebuilding their normal and permanent home. So for selecting appropriate places for site selection of these temporary residential units, we must consider several criteria and standards. The sociological studies of disasters and the existing experiments show that the damaged masses of people have some tendencies about their selective place for temporary shelter that approximately mentioned below:

–Primarily damaged masses prefer to stay close to the damaged houses, even ruined and their life stuffs. The temporary shelters beside the ruined houses are the most desirable shelter model for damaged masses.

–Some of the damaged masses due to friends', families' and their facilities go to the families' and friends' homes and often one of the family members comes back to visit and protect the remained stuffs.

–Thirdly, damaged masses are ready to live in camps, distance of these camps to their previous residential place is very important. So if these camps are close to the previous residential place, they perhaps show much tendency to live in them.

Therefore, we must possibly prevent from evacuation of damaged masses to other places and if this forcibly happens by the helping organizations, it certainly can cause the decrease of their participation in the next rebuilding operation. So helping organizations should undertake all of the responsibility, work and involvement of the rebuilding.

3- Discussion

In this research, according to analytical – descriptive method, after clarifying the effective criteria in positioning the temporary houses that has the record pertaining to research and are selected based

on the studied region and available information and data, the studied criteria and indicators were weighted according to the idea of the crisis management experts and by using the couple comparison and Expertchoice software. The output of this step is weights value table of the studied criteria, in terms of importance in studied region. Then, using the AHP model and Arc GIS software, production layers of each criterion as for the specified weight of each, were combined together and their output is the surface zonation map of the sixth region of Shiraz Municipality for temporary habitation of damaged masses.

4- Conclusion

The results of this study show that according to the population of the sixth region of Shiraz Municipality, 51949 specified sites in this research for establishing the temporary houses, not only will supply the needs of current and predicted population of this sector in 1395, but also can be used for overflowing population of the other sectors of Shiraz City. In addition, in case of any unpredictable population changes, unexpected events and etc., we can take advantage of the other highlighted levels that have lower rating than chosen places for temporary housing of damaged masses.

In addition, we must say that according to the idea of experts two criteria, the availability and the existing specifications, both with 33.6 % of importance are the most significant in comparison to all other criteria and after that the distance of river criterion with 18.6 %, the distance to risky installation with 5.6 %, the density of population with 5.4 % and the distance to fault with 3.1 % of importance are in the following steps. These numbers show that considered hypothesis in this research namely "it seems that the availability is

known as the most effective factor in site selection of temporary housing after the event in the sixth region of Shiraz Municipality." is not acceptable, and the crisis management experts and specialists in addition to the availability factor, pay attention to the other factors as for the studied region and they cannot consider the availability factor as the only most effective factor in selecting place for temporary housing.

5- Suggestions

- Considering the necessary equipment and services in the chosen places for temporary habitation specially parks and gardens such as specifying the landing spot of helicopter, rest rooms, water resources and etc., so that if a disaster happens, there will be no need for much time for providing them and there will be no disturb in the faster helping process.

- Findings of this study show the ability of geographical information system and multi-criteria decision-making systems in the modeling and their application in site selection of temporary housing places and the combining different criteria. For this purpose, it is suggested that related organizations pay more logical attention to these systems and expend much cost and accuracy in the preparation of the necessary maps and pay attention to high cited capability of these geographical information and multi-criteria decision-making systems and the point that with the correct and comprehensive data and information of the current situation, these systems can be the decision-making base far from the manners and trends of people and can provide the basis for positioning more scientific temporary housing place that is one of the problems of our metropolises.

- Results of the current study show the relative importance of the availability

factors and the existing situation of land uses in the studied area in comparison to the other factors for positioning the temporary habitation. Nevertheless, it is recommended that in weighting the factors and criteria, one must studied sector's properties like natural factors as river, slope, fault, mountain, etc. Some factors might have a higher priority than the availability and the existing situation of land uses factors, according to the area's conditions.

- Although the flat lands around the studied area have the possibility to create camp but they are away from service centers which make the locations undesirable. So, it is better that we avoid creating the temporary houses in these sectors.

- Creating campuses like parks, gardens, sports grounds, etc. with at least 2000 square area in neighborhood units while other building affairs are performed in built places to evacuate damaged masses to these places and to establish temporary houses in them rapidly.

- Lands that are less used during the year and have less importance and sensitivity, such as sports grounds, schools, etc. can be temporarily used for temporary housing of damaged masses or temporary establishment of another important land use to continue urban life.

Key words: Temporary housing, site selection, Disaster management, GIS, AHP Method

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